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October 15, 1999

Magalie Roman Salas, Commission Secretary
Office of the Secretary
Federal Communications Commission
The Portals
445 Twelfth Street, S.W.
Room TW-A325
Washington, DC 20554

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Dear Ms Salas,

Please accept the attached comments of the WGBH Educational Foundation in the Matter of Closed Captioning requirements for Digital Television Receivers, ET Docket No. 99-254.

These comments have also been filed through the ECFS as an electronic submission.

Sincerely,

Larry Goldberg, Director
Media Access
WGBH Educational Foundation
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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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In the Matter of)

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Closed Captioning Requirements for)
Digital Television Receivers)

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ET Docket No. 99-254

COMMENTS OF
THE WGBH EDUCATIONAL FOUNDATION
IN THE NOTICE OF PROPOSED RULEMAKING REGARDING
CLOSED CAPTIONING REQUIREMENTS FOR
DIGITAL TELEVISION RECEIVERS

Filed: October 18, 1999

NOTE:

On August 12, 1999, subsequent to the Commission's release of this NPRM, the Consumer Electronics Manufacturers' Association (CEMA) Video Systems Committee (R4) adopted revisions to the closed captioning standard referenced in this NPRM. All references to EIA-708-A should therefore be changed to reference EIA-708-B, the current adopted industry closed captioning standard. For simplicity, we will simply refer to "EIA-708" in these comments.

To The Commission:

SUMMARY

1. The WGBH Educational Foundation and its Media Access division congratulates the Commission for the release of this Notice of Proposed Rule Making in the Matter of Closed Captioning Requirements for Digital Television Receivers (the "Notice") and offers the following in response to your request for comments.
2. First generation digital television reception and display equipment is already being sold to consumers with a wide variety of capabilities for reception and display of closed captioning. The second generation and perhaps third generation of equipment will be on the market before the results of this proceeding will be felt by consumers. The Commission's intention to issue closed captioning requirements for the range of equipment consumers will be purchasing is essential to assure that the provisions of the Television Decoder Circuitry Act of 1990 are universally and consistently applied.
3. In incorporating relevant sections of the accepted industry standard EIA-708, the Commission has rightly referenced the document most widely used and accepted by the television industry for its development of digital television closed captioning equipment.
4. However, the Commission's proposal to adopt only section 9 of EIA-708 as the requirement for receivers not only falls short of the existing closed caption requirements for NTSC receivers but also the ignores the great potential for improvements represented by the advancements of television and captioning technology since 1990. Section 9 of EIA-708 delineates a recommended "least common denominator" or minimum set of features, but the Notice also proposes that there may be a larger set of features that should be incorporated into its rules. Our comments indicate those areas where a wider set of features should be required and argue that this expansion beyond section 9's recommendations needs to be required rather than optional so that consumers will actually be served fully by the new digital television system being offered to them.
5. Our comments also indicate the need to incorporate the entire updated EIA-708 standard to insure that not only are base minimums uniformly implemented but also to guarantee that all enhanced products perform identically so that consumers can be assured of a reliable and robust closed captioning service.

INTRODUCTION

6. The WGBH Educational Foundation is one of the country's leading public broadcasters and has long considered one of its central missions to be increasing access to media for people with disabilities. In 1971, WGBH established The Caption Center, the world's first captioning agency, to produce captions for TV programs so that deaf and hard-of-hearing viewers could gain equal access to those programs. Today, The Caption Center produces captions and subtitles for every facet of the television and home video industry in addition to CD-ROM and Web-based multimedia and conventional and large-format theatrical motion pictures and theme park attractions.
7. Subsequent to its work helping shape the legislation of the Television Decoder Circuitry Act of 1990, staff from The Caption Center began work with colleagues in the captioning and television industries to create a standard and specification for line-21 closed captions for NTSC television. Under the auspices of the Electronic Industries Association, the Television Data Systems Subcommittee (R 4.3) created the EIA-608 "Recommended Practice for Line 21 Data Service." The Caption Center at WGBH created a video test tape which has been widely used throughout the industry to test implementation of the EIA-608 standard. The Caption Center at WGBH has also consulted with numerous manufacturers about their decoder circuitry design and display characteristics.
8. In 1993, in partnership with the Corporation for Public Broadcasting, the CPB/WGBH National Center for Accessible Media (NCAM) was established as an R&D facility designed to extend WGBH's previous media access efforts into new media and to further the uses of captioning and descriptive video in the home, classroom, workplace, and community. One of NCAM's first projects (under a Federally funded grant) was to begin work on user-testing and simulation of closed captions in the emerging "Advanced Television" system. Eventually out of this work, the EIA-708 standard, "Digital Television (DTV) Closed Captioning" emerged.
9. In 1998, NCAM established the DTV Access Project to encourage implementation of DTV services for people with sensory disabilities. Project staff participate directly in the major industry standards organizations, including the Consumer Electronics Manufacturing Association (CEMA), the Advanced Television Systems Committee (ATSC), and the Society for Motion Picture and Television Engineers (SMPTE). The Project is creating a series of closed caption and video description test materials for industry use in the digital domain.

MINIMUM DECODER REQUIREMENTS

10. It is WGBH's view that the minimum implementation ("least common denominator") recommended in EIA-708, Section 9, falls short of delivering a base-level of captioning service, does not go far enough in serving deaf and hard-of-hearing viewers and does not fully exploit the capabilities of this powerful new technology, digital television. Consumer needs will be much more readily served if minimum capabilities are extended to include the changes mentioned below. Some of these changes are necessary just to maintain the existing minimum level of service available in today's analog, line-21 caption service while other changes are needed to assure backward compatibility with existing caption-capable NTSC equipment.
11. Paragraph 6 of the NPRM indicates two desired outcomes anticipated in the adoption of EIA-708 as the DTV closed-caption standard: the ability to "allow viewers to change the size and appearance of captions to suit their needs," and the ability to provide "substantial improvement over current captioning standards." However, the "least common denominator" recommendations of section 9 of EIA-708, if implemented as the accepted minimum standard, will significantly limit these two desired opportunities for improvement. The most frequently requested revision (of the existing caption service) that deaf and hard-of-hearing viewers have communicated to our staff are: more user control and a better look-and-feel.
12. In quoting EIA-708's section 9: "the minimum recommendations are not intended to, and should not, restrict caption providers from using the extensive capabilities available under the standard," the NPRM disregards the long history of usage of required vs. optional caption features. Unless a feature is common to all caption display devices, a caption provider cannot rely on the use of this feature as an essential and recommended practice, knowing that some caption viewers will not be able to take advantage of it. For example, in the present system, eight colors are available for caption text. If, for example, a caption provider decided to use color as a speaker identification, a significant number of caption viewers would miss out on this additional information since color is not required under the previous FCC rules. Therefore, very few, if any, programs incorporate color captions to indicate important information.
13. Similarly, without a requirement for support of the multiple caption channels available under EIA-708, it is unlikely that such services would emerge. Program producers must know that the entire audience will be served if they decide to pay for alternate language or "beginning reader" captions.

14. The Commission should extend the minimum decoder requirements beyond those detailed in EIA-708, section 9 to allow for greater user choice. Specifically, EIA-708, section 9.13 recommends that decoders support only the STANDARD Pen Size, in effect eliminating a consumer's ability to re-size captions. Often referred to as the "caption volume control," this feature will allow consumers to select LARGE and SMALL fonts as well as the default STANDARD size. For consumers with vision problems, resizing to LARGE captions is an essential feature. For viewers who prefer their captions unobtrusive, resizing to SMALL captions is the preferred mode. Adding consumer control over caption sizes would represent a major leap forward in the usability of the service without presenting insurmountable technological challenges to manufacturers. As a matter of fact, the "windowing" environment in the EIA-708 standard was designed to allow caption providers to create a targeted safe area for caption display while allowing consumers to grow or shrink captions within that window.
15. Section 9.14 of EIA-708 recommends a minimum decoder implementation of "a single font for caption text display," even though the full standard allows for up to eight alternate fonts. Again, the Commission's desire to promote a "substantial improvement over current captioning standards" will be supported by new display options that help captions match the quality and clarity of the digital picture itself. Better and sharper fonts, selectable by the user, will take advantage of the inherent sophistication of the DTV system and help assure that the closed-caption features are as advanced as the audio and video themselves.
16. Section 9.18 of EIA-708 recommends that decoders "need only implement solid black character backgrounds," holding back any improvements in the look and feel of captions. When the Commission required the solid black background for captions in line-21 analog television services, it ensured that consumers would be able to clearly discern captions in a crude, though effective display against any background image. Since that time, the resolution of display devices has increased significantly and the "black box" background, along with the crude fonts, remain as unnecessary legacies of the original caption system. While a black background is still a failsafe mechanism for display of caption characters, better-looking and even clearer display attributes are possible and should be included in minimum feature sets. A translucent ("gray mist") background has long been the preference for subtitles and is the type of improvement this Notice can assure.
17. Section 9.2 of EIA-708 states that decoders "should be capable of decoding and processing data for at least one (1) service." Such a minimum would

actually be a 50% step backward from today's minimum requirements and an even larger step backwards from today's common practice. In the FCC's rules which govern closed caption decoder requirements¹, ¶ (c) Operating modes, states that, "The television receiver must decode both C1 and C2 captioning, and must display the captioning for whichever channel the user selects." In fact, with dual-field line-21 caption decoder circuitry becoming more and more common, today's television receivers frequently offer access to four caption channels: CC1, CC2, CC3, and CC4.

18. With the multitude of services and languages expected to be vying to serve consumer needs, we believe the Commission should make it clear that a minimum decoder is expected to decode and process all of the Standard Services as defined in EIA-708, Sec. 6.1 and 6.2.1 ("There are 6 standard services and up to 57 additional extended services allowing for 63 total services.") This requirement is essential to create a large installed base so that other services of interest to the Commission and to users, such as "beginning reader" or alternate language captions, are widely supported and therefore available to all future caption users. If receiver support for at least the six Standard services is made optional and implementation therefore becomes limited, program providers are unlikely to expend the funds to provide these alternate services on their programs. Making a digital receiver purchase will be difficult enough without requiring consumers to shop around to find out which digital TV set supports six caption services; ALL receivers should offer such support.
19. In order to provide the utmost clarity and the most comprehensive guidance to receiver manufacturers, the Commission should incorporate into its rules by reference the entire EIA-708 standard and related documents². Without this additional information, implementation of both extended (optional) features and minimum (required) features is likely to be less than universally common in implementation and thereby a disservice to consumers.
20. Much of the captioning standard described by EIA-708 includes terminology and concepts unique to digital captioning, often with no direct corollary to NTSC captions. The full EIA-708 standard includes normative and informational references that are essential to understanding digital captioning, and the full text - particularly in Sections 4 (DTVCC Transport Layer) and 6 (Caption Service Layer) - includes detailed definitions and discussion found nowhere else. Particularly helpful are discussions of inclusion of EIA-608-type caption data in the ATSC (DTV) caption transport layer.

¹ PART 15--RADIO FREQUENCY DEVICES, Section 15.119 Closed caption decoder requirements for television receivers of the FCC's Part 15 rules

² Including an expected CEMA Recommended Practice document now in draft form in committee.

21. We feel that incorporation of the full EIA-708 standard will provide consumer equipment manufacturers, program providers, consumers and other interested parties the unambiguous information they need to fully understand and successfully implement digital closed captioning reception and display, at either a minimum level or any level of enhanced service.

RECEIVER REQUIREMENTS

22. We agree that application of the FTC labeling standard to DTV receivers is appropriate, and consistent with definitions used as industry standards for the past decade under the Television Decoder Circuitry Act. Variations in total picture area due to differing aspect ratios do not warrant a new requirement other than the existing "13 inches diagonal."

DUAL MODE DEVICES

23. The Commission in the Notice defines a "dual mode" receiver as one that allows a viewer to watch analog television stations as well as digital signals (§ 11). This assumes a set-top box or "integrated" receiver/display containing two tuners: one analog and one digital.
24. We agree that any such "dual mode" device operating in the analog mode should provide closed captioning functionality pursuant to the Commission's existing rules for analog, line-21 closed caption reception and display. We also agree that such a device operating in the digital mode should be required to function primarily in accordance with the EIA-708 standard. The analog tuner should process line-21 captions from an NTSC signal for user-selectable display on an NTSC receiver, and the digital tuner should decode and display the digital television closed-caption channel of the DTV signal.

SET-TOP BOXES

25. There are, however, many DTV devices now on the market that include only a single digital tuner. These devices decode digital television signals for native digital displays. Additionally, they commonly "down-convert" the digital television signal to a composite NTSC output, allowing the signal to be routed to a consumer's existing NTSC television for display or VCR for recording.

26. EIA-708 provides a simple mechanism to deliver appropriate caption data to DTV and NTSC devices alike³. Native DTV closed captions (DTVCC) are included in the DTVCC Caption Channel. Standard NTSC caption data are placed within the DTVCC Transport Layer, where they are readily available for simple closed-caption decoder implementations in hybrid set-top devices. The NTSC caption data can then be easily encoded onto line 21 of the NTSC composite video out, enabling full closed-caption compatibility and functionality with any attached NTSC device. Such devices include not only 13" or larger receivers manufactured since 1993, but also VCRs and the increasingly popular TV tuner cards for personal computers, many of which include caption decoding circuitry.
27. However, most of the current DTV set-top boxes on the market do not decode or display data from the DTVCC Caption Channel. Moreover, most do not re-encode NTSC Caption Data onto line 21 of the NTSC composite video output. Instead, when they do handle caption data at all, they typically pass the NTSC Caption Data to an On Screen Display (OSD) and render standard NTSC captions as a video overlay, resulting in an "open captioned" display that becomes a permanent part of the signal. The line-21 caption data are not encoded onto line-21 of the NTSC video out and never arrive at the NTSC receiver.
28. The proper method of re-encoding a digital video signal's caption data onto line 21 for selectable display via an NTSC receiver's caption decoder circuitry is already commonplace and readily available. In direct-to-home digital satellite systems, the caption data is stripped off the analog video signal prior to digitization and transmission of the digital video signal. The caption data is then transmitted as a separate part of the satellite-distributed digital video signal. Upon reception in the home satellite receiver, the caption data is re-encoded onto line-21 of the analog signal sent to the home receiver. That receiver's existing FCC-compliant caption decoder then works in a normal fashion.
29. The unfortunate end result of the usual practice for the present digital set-top boxes is that consumers cannot take advantage of the new capabilities of digital captioning, and actually lose a significant feature of closed captioning - the ability to record closed-captioned programming that can be "opened" or "closed" at the viewer's discretion; instead the captions are "burned in" at the box.
30. Pursuant to the rationale presented in ¶ 12 of the Notice, we agree with the Commission that all set-top boxes sold with or without display devices and all separately sold DTV tuners should be subject to the provisions of

³ See EIA-708-B, Section 4.3, "NTSC Caption Data"

the Television Decoder Circuitry Act and should provide for the display of closed captioning.

31. In addition to the above requirement that digital tuners respond primarily to data in the DTVCC Caption Channel, we propose that NTSC outputs of DTV devices used in conjunction with analog receivers or VCRs should contain the entire line 21 data stream carried within a received DTV program, unaltered and properly re-encoded into the NTSC video in accordance with EIA-608-A.

COST

32. We agree with the Commission that these requirements should not significantly impact costs to consumers for these devices. There is a wide variety of proven software and silicon chip-based encoders and decoders presently available in the market.

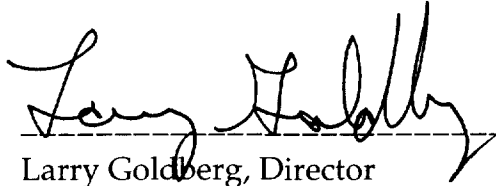
EFFECTIVE DATE

33. We feel that the proposed one-year transition period is sufficient. We expect that development of DTV closed-captioning authoring and encoding tools will proceed rapidly once the standards in this proceeding are adopted. Testing tools and materials are already nearing completion.

CONCLUSION

34. The development and distribution of a new digital television service and equipment in this country has been an enterprise consuming enormous quantities time and energy of numerous dedicated engineers, designers and technologists. Equally large financial investments have been made by corporations large and small around the globe. As we approach the point where these new technologies become commonplace and affordable to the mass of American consumers, it would be unfortunate if we did not make the relatively simple and reasonable decisions to assure that tens of millions of our deaf and hard-of-hearing friends, families and fellow citizens can share equally in these great leaps forward in technology. With but a few small efforts, closed-captioning for digital television can and will be as reliable, robust, dynamic and exciting as the picture, the sound, and the ancillary services of the television of the future.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Larry Goldberg", is written over a horizontal dashed line.

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